Zero Retries issue 0095 2023-04-21

Zero Retries is an independent newsletter promoting technological innovation in Amateur Radio, and Amateur Radio as (literally) a license to experiment with radio technology.

About Zero Retries

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Request To Send

Editorial by Steve Stroh N8GNJ

800+ Subscribers!

Zero Retries now has more than 800 subscribers! Thank you *very* much folks! The previous "century" milestone was 700+ subscribers on 2023-01-12. Thank you all for coming along on this interesting journey.

Zero Retries Domain is Unchanged

I didn't get the Zero Retries domain changed from https://zeroretries.substack.com to https://zeroretries.org. I'll attempt it again the week of 2023-04-23.

Vintage Computer Festival (VCF) East 2023

I had a fun (but too brief) visit to VCF East 2023. This Hackaday article — Vintage Computer Festival East Was A Retro Madhouse, sums up the event pretty well, including the title.

One elaboration of mine — the statement

> The line to get food or browse the consignment area occasionally stretched outside the building…

… is *considerably* understated. My personal estimate (having been in that line, but gave up) is that the wait time in that line was at least 90 minutes.

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73 to Dan Romanchik KB6NU as ARDC Communications Manager

Amateur Radio Digital Communications (ARDC) Executive Director Rosy Schechter KJ7RYV mentioned in her section of the ARDC 2023-04 Newsletter:

> On a sadder note, Dan Romanchik, KB6NU, will be leaving ARDC. While we're excited for him and his next journey, he's going to be missed here at our virtual office. This news means we have some big shoes to fill, and we are getting to work filling them! If you know of someone who might come close, please send them the Communications Manager job description linked below.

I was a cheerleader when KB6NU joined ARDC to help them communicate better. In those early days at ARDC before KB6NU came onboard, ARDC's (then minimal) staff *really* struggled to do regular communications to promote ARDC and its mission(s). With KB6NU onboard, ARDC was finally able to do regular, reliable, consistent, high-quality communication and promotion such as press releases (for every, not just occasional significant developments) and newsletters (*every* month).

KB6NU will hardly be idle upon leaving ARDC. He has his excellent No-Nonsense Study Guides, he's a regular on the ICQ Podcast, he writes interesting stuff on his KB6NU Blog, and of course there are his duties as a Zero Retries Pseudostaffer, spotting Zero Retries Interesting items (that I miss) and posting them on his blog.

I look forward to chatting more with KB6NU now that we're both "retired" from ARDC and released from those constraints.

Congrats Dan!

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RFNM — Software Defined Transceiver With Impressive Specifications

My mind reels with the specifications of this device (which apparently is still in the project stage). I could not find an explanation for the RFNM acronym.

To be clear, the specifications of this unit, taken in isolation, aren't that exceptional — see the Ettus Research products. But… the price point of the RFNM (rumored — not explicitly stated)… is *$500 — that's* the impressive part!

RTL-SDR (Blog) does a good job introducing it:

The RFNM: A Next Generation SDR with 10 MHz to 7200 MHz tuning range, 12-Bit ADCs and up to 612 MHz Bandwidth

But in my opinion, there's much more impressive detail at the project's website — https://rfnm.io/. Here are just a few details that leap out at *me*:

> Tuning range - 10 MHz to 7.2 GHz

Um, *not bad!*

Note that this frequency range outperforms the upcoming Icom IC-9051 Superradio by including the Amateur Radio 28-29.7 MHz (10 meters), 50-54 MHz (6 meters), 219-220 and 222-225 MHz bands (1.25 meters), 902-928 MHz (33 centimeters), *and* all the bands that the IC-905 covers other than 10 GHz2. Unlike the IC-905, the RFNM is *fully* software defined, unlike Icom's decisions of what features / bands to incorporate, or not.

> Total Real Time Bandwidth: 612 MHz (Receiver), 153 MHz (Transmitter)

Wow… those specs are amazing.

> Granita is our attempt at building the most advanced RF board of any consumer-grade SDR. We spared no expense, and it shows.

Consumer grade Software Defined Transceiver?!?!?!

> We went the extra mile with the addition of 13 preselection filters and six different [Low Noise Amplifiers — LNAs] for each frontend, programmable attenuators for both receiver and transmitter paths and two transmitter amplifiers.

One of the (valid) complaints of Software Defined Transceivers is that because they're designed for a very wide frequency range (with little or no filtering) they're easily saturated by nearby transmitters (regardless of receive frequency or the transmitter frequency — it's the total energy that overwhelms the receiver). To be usable for some purposes, an SD Receiver often requires an outboard filter or LNA. Thus having a number of built-in preselection filters that are software selectable is impressive and highly useful. Ditto the LNAs for improving sensitivity, and programmable attenuators for decreasing receive sensitivity.

GNU Radio Support?

One minor warning sign about the RFNM is there's no mention that GNU Radio software has been ported to this unit. Perhaps it's too early for that (no prototype hardware yet)?

Dreaming A Bit…

This unit is intriguing that it could be the basis of an Amateur Radio unit equivalent to the Icom IC-905. Just imagine a funded project by, say, a major radio manufacturer that *really* understands Software Defined Radio technology applied to Amateur Radio. All the basic specs are present, including a reasonable price point. What remains to create a unit functionally equivalent to the IC-905 equivalent is "pretty simple":

- **Software** — I'll guess that GNU Radio support will be quickly added as a baseline to be able to understand the full capabilities of the unit. Given how inexpensive high-performance embedded computers are in this era, just run GNU Radio in the background, and develop a nice-looking user interface.
- **Power Amplifiers for the VHF / UHF bands** — The small team of the RPX-100 was able to figure this out, so I'm sure other entities can do so.

- **Misc. Electronics and packaging** — Such a radio will require a sturdy box with connectors, with a robust ("Amateur Proof") power supply.
- **Display** — For this, dedicate a small computer to it solely to act as the display.

Although the RFNM wasn't explicitly developed for Amateur Radio… it could end up being widely used in Amateur Radio. Or so we can hope.

Zero Retries subscribers — if you are going to be pressing the flesh with Amateur Radio vendors at major conferences this year, *please* talk up possibilities like the RFNM directly to them. *The Amateur Radio vendors need to hear that this level of radio technology, at these price points, actually exists!*

The continuing technological innovation of advanced, but cost-effective radio technology such as the RFNM continues to inspire me in writing Zero Retries.

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Image courtesy of netfinder.radio

NetFinder: The Definitive Ham Radio Net Directory

By Steve Stroh N8GNJ

"Nets" are one of the unique capabilities of Amateur Radio; being able to conduct multiuser discussions via radio at scheduled times. The problem is… how do you find them other than stumbling into them? This new project is a great 21st century solution to finding interesting nets that you wouldn't otherwise know about.

Cale Mooth K4HCK, proprietor of Amateur Radio Weekly (of which I'm a fan), has birthed a new project — NetFinder. From the intro article:

> NetFinder is an online directory of Ham Radio nets designed to help Hams discover new nets and connect with other Amateur Radio operators.
>
> A comprehensive and easy to use directory of Ham Radio nets is a project that I've thought about for years and recently spent the past 18 months building. This project is intended to fill what I see as a gaping hole in the hobby: A central place to easily find a net and get on the air.

I've browsed NetFinder a bit and I quite like it! The presentation is very clean and modern. But, I felt moved to quickly provide some Zero Retries feedback to K4HCK — *where are the data mode (text chat) nets ?* 🤨 **Update** — Data Nets are now included!

Geographic search is mentioned as "coming soon" feature, and in my feedback I suggested using ARRL Sections3 as reasonable regional subdivisions; for example, Eastern and Western Washington, New York City - Long Island, Northern New York, Eastern New York, Western New York, etc.

To be fair, NetFinder has *just* been released to the public this week, and is labeled as beta, so it's early days.

NetFinder is a great idea! K4HCK right in his assessment — it's needed, and especially it needs to be user-editable and have a significant community element, both of which have been incorporated.

Kudos K4HCK!

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ZR > BEACON

By Steve Stroh N8GNJ

Short mentions of Zero Retries Interesting items.

Kenwood at Hamvention 2023 — with a new product(s)?

I enjoy reading about rumors about future Amateur Radio products[4], so this brief mention on Reddit's amateurradio group caught my attention:
It's happening: Kenwood to show new radios at Hamvention
…
Per a couple of threads in the Kenwood D74 Owners Facebook group, not only is Kenwood going to be at Hamvention this year, but they are showing off "new product".

This thread appears to confirm via Kenwood support that the replacement for the TH-D74 will be out this year.
…

ARDC is Hiring for Comm. Manager and UX/UI Designer

I have no longer have any involvement with Amateur Radio Digital Communications — ARDC, but some very good people work and volunteer there, and ARDC does great work in Amateur Radio and beyond, so these new hires will be in very good company and making a difference in Amateur Radio.

- Communications Manager
- UX/UI Designer/Developer (Contractor)

Inovato Quadra Now Includes Amateur Radio Apps

I first mentioned the Inovato Quadra in Zero Retries 0070. The Inovato Quadra is a small computer with an ARM processor that runs Linux (Armbian[5]) — and costs $35. It's not… entirely… a replacement for the Raspberry Pi… but it is a nice computer that's inexpensive enough to dedicate to a task such as Amateur Radio. Thus it's an interesting development that the Quadra will now ship with a number of Amateur Radio apps pre-installed on new Quadra units:

> The Quadra image now includes the following Ham Radio apps in a new Ham Radio menu…
>
> - WSJT-X (2.6.1, latest)
> - PAT Winlink (packet and ARDOP). Includes a dialog-based Winlink configure script so no manual file editing needed.
> - HamClock
> - JS8Call
> - FLDigi, FLRig, FLMsg, Hamlib

You can also update older Quadra units with this new firmware / operating system versions. This is a work in progress and Inovato is requesting feedback on the selection of Amateur Radio software.

Note that this development is independent of HamPi being ported to the Quadra.

My thanks to Steve Magnuson AG7GN for pointing out this development.

The Open Source Hardware Conundrum

Fellow Substack newsletter author Jason Milldrum NT7S (Applied Etherics) explores a tricky issue with our current world of open hardware design in his latest newsletter The Open Source Hardware Conundrum.

> I've long been a proponent of open source hardware in amateur radio, because I believe we hams should have real *ownership* of our radios and other gear. Watching a few Louis Rossmann videos will quickly show you the many downfalls of proprietary, closed hardware systems, if you haven't personally ran into them yourself. However, running a very small open source hardware (and firmware/software) business has shown me that the great weakness of that business model may be very difficult to overcome. It's not like this is a new problem and that it hasn't been pointed out from the beginning of the entire concept, that it would be difficult to successfully pull off. It's been done in the software domain, but hardware (and perhaps even more specifically the combination of hardware plus firmware) is a tough nut to crack.

The raison d'être of Applied Etherics is to develop Project Yamhill and it's an interesting experiment that NT7S hopes to at least partially fund it through

paid subscriptions in Substack. Thus this isn't a theoretical discussion for him. I offered some feedback in the comments for that issue.

Leave a comment

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Feedback Loop

Comments:

Thank you ReadyKilowatt, but special Thanks to Alexander DL4NO for exchanging several rounds of insightful comments in Zero Retries 0094 regarding the role of national Amateur Radio organizations. Greatly appreciated!

If you provide feedback via email, I may excerpt your feedback or include it in full. Unless you specifically grant me permission to include your name, I won't do so. Feedback may be lightly edited for clarity.

Join the *Fun* on Amateur Radio

If you're not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, check out
Join the Fun on Amateur Radio for some pointers.

Zero Retries Frequently Asked Questions (FAQs) — In development 2023-02.

Closing the Channel

In its mission to highlight technological innovation in Amateur Radio, promote Amateur Radio to techies as a literal license to experiment with radio technology, and make Amateur Radio more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to everyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex, which hides Amateur Radio content behind paywalls.

My ongoing ***Thanks*** to:

- Tina Stroh KD7WSF for, well, *everything!*
- **Pseudostaffers** that write about about "Zero Retries Interesting" items on their blogs that I don't spot:
  - Dan Romanchik KB6NU
  - Jeff Davis KE9V
- **Newsletters** that regularly feature Zero Retries Interesting content:
  - Amateur Radio Weekly by Cale Mooth K4HCK is a weekly anthology of links to interesting Amateur Radio stories.
  - Experimental Radio News by Bennet Z. Kobb AK4AV discusses (in detail) Experimental (Part 5) licenses issued by the US FCC.
  - TAPR Packet Status Register has been published continuously since 1982.
  - Other Substack Amateur Radio newsletters recommended by Zero Retries.
- **YouTube channels** that regularly feature Zero Retries Interesting content:
  - HB9BLA Wireless by Andreas Spiess HB9BLA
  - KM6LYW Radio by Craig Lamparter KM6LYW (home of the DigiPi project)
  - Modern Ham by Billy Penley KN4MKB
  - Tech Minds by Matthew Miller M0DQW
- The Substack email publishing platform makes Zero Retries possible. I recommend it for publishing newsletters.

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Zero Retries (N8GNJ) is on Mastodon — n8gnj@mastodon.radio — just click:

Zero Retries / N8GNJ on Mastodon

Email issues of Zero Retries are "instrumented" by Substack to gather basic statistics about opens, clicking links, etc.

More bits from Steve Stroh N8GNJ:

- SuperPacket blog — *Discussing new generations of Amateur Radio Data Communications — beyond Packet Radio (a precursor to Zero Retries)*
- N8GNJ blog — *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs — Bellingham, Washington, USA*

Thanks for reading!
Steve Stroh N8GNJ / WRPS598 (He / Him / His)
These bits were handcrafted (by a mere human, not an Artificial Intelligence bot) in beautiful Bellingham (The City of Subdued Excitement), Washington, USA.

2023-04-21

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1

Understood that the IC-905 vs RFNM isn't a totally fair comparison given that the former is (nearly) a product and the latter is only a *project* at this point.

2

To be fair to the RFNM, the IC-905 *isn't* capable of 10 GHz *natively* — the optional Icom CX-10G (10 GHz / 2.4 GHz transverter) is required to cover the Amateur Radio 10 GHz band.

3

To be clear, I'm not suggesting *any* involvement of ARRL in NetFinder… it's just that the ARRL Sections are a reasonable geographic differentiation of US Amateur Radio populations; higher population concentrations merit additional Sections.

4

The rumored products often seem, in the end, to be more exciting and interesting than the eventually unveiled product.

5

It's been an amusing tug of war in writing this article to keep the spelling checker from "helping" me by fixing *Arm*bian… to Arabian.